

REMARKS/ARGUMENTS

Claims 1-4, 6-10, 26-33, 37-39, 41-43, and 50-51 are under examination. Claims 34-36 had previously been canceled without prejudice. Claims 5, 11-25, 40 and 44-49 have been withdrawn as non-elected claims. Applicants reserve the right to file one or more divisional or continuation applications to pursue the subject matter of the withdrawn claims.

Claims 1 and 26 have been amended to better claim the subject matter which Applicants regard as the invention. Support is found at page 47, lines 6-7, of the specification, where it is stated that there is about 95% amino acid sequence identity between PhyA-1 and PhyA-2 polypeptides. Further support can be found at page 9, lines 27-29 and page 44, lines 17-18 in the specification. Based on these disclosures, it would be apparent to a person skilled in the art that the PhyA-1 polypeptide (SEQ ID NO: 4) and the PhyA-2 polypeptide (SEQ ID NO: 2) share at least 95% sequence identity. Further, the present specification discloses expression of both the PhyA-1 polypeptide (SEQ ID NO: 4) and the PhyA-2 polypeptide (SEQ ID NO: 2). Accordingly, the amendments made herein in claims 1 and 26 are fully supported by the as-filed specification.

Claims 6-8 have been amended to correct dependency. Claims 6, 41-43, and 51 have been amended for improved clarity. The specification has been amended as suggested by the Examiner. The correction on page 48, line 9 is an obvious inadvertent typographical error. No new matter has been introduced with this Amendment.

Claim Objections:

Claims 6-8 and 41-43 are objected to for being dependent on non-elected base claims. The present Amendment corrects the dependency of these claims. This objection is moot with entry of this Amendment.

Claims 6-7, 9-10, 28, and 41-42 are objected to for being drawn to non-elected inventions, i.e., SEQ ID NO: 1, 2, 9, and 10. Applicants submit that, with entry of the present Amendment, claim 1 specifically recites that the phytase polypeptide expressed ectopically comprises an amino acid sequence having at least 95% identity to SEQ ID NO: 4. As stated in the specification (page 47, lines 6-7), there is at least 95% identity between the PhyA-1 polypeptide (SEQ ID NO: 4) and the PhyA-2 polypeptide (SEQ ID NO: 2). Accordingly, the phytase defined in amended claim 1 includes the phytase having the amino acid sequence of SEQ ID NOs; 2 (PhyA-2) and 4 (PhyA-1) in addition to those having at least 95% amino acid sequence identity to SEQ ID NO: 4. Therefore, the recitation of SEQ ID NOs: 1, 2, 9, and 10 in claims 6-7, 9-10, and 41-42 are proper since these sequences related to the amino acid and nucleotide sequences of *PhyA-2*. Withdrawal of the objection is respectfully requested.

Claim Rejections under 35 U.S.C. §112:

Claims 6-7, 9-10, 28-33, and 41-42 are rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite. Applicants respectfully traverse this rejection.

The Office Action alleges that Applicants have not clearly defined what SEQ ID NOs: 3 and 4 are. The present Amendment corrects an inadvertent typographical error at page 48, line 10. However, Applicants submit that this rejection is not properly raised since each of the rejected claims clearly defines the phytase polypeptide in terms of either its amino acid sequence or the nucleotide sequence encoding the phytase polypeptide. Accordingly, Applicants maintain that the claims as recited are clear and definite. Applicants further submit that the specification clearly provides the following description regarding the sequences shown in SEQ ID NOs; 3 and 4, at page 19, lines 19-27:

The amino acid sequence set forth in SEQ ID NO: 4 relates to a variant of the *A. niger* PhyA-1 polypeptide (Mullaney *et al.*, 1991; Van Hartingsveldt *et al.*, 1993; GenBank Accession No. M94550), having the

leader sequence removed and a different translation start site inserted relative to the naturally-occurring PhyA-1 polypeptide. To express the PhyA-1 polypeptide in plants, the present inventors modified the corresponding *PhyA-1* gene sequence to remove the endogenous *A. niger* leader sequence-encoding nucleotide sequence and intron sequence, and introduced a new translation start site immediately prior to and in-frame with, the nucleotide sequence encoding the mature PhyA-1 polypeptide.

SEQ ID NO: 3 is the nucleotide sequence of 1350 bases encoding the PhyA-1 polypeptide whose amino acid sequence is shown in SEQ ID NO: 4 (449 amino acids). The sequence given in SEQ ID NO: 4 is a variant sequence of the protein encoded by the nucleotide sequence of GenBank Accession No. M94550; the first 19 amino acids ("leader") of M94550 were removed and methionine was added as a new translation start site. This is clear from the above quoted paragraph. Based on the foregoing, withdrawal of the rejection under 35 U.S.C. §112, second paragraph, is respectfully requested.

Written Description:

Claims 1-4, 26-27, 30-33, 37-39, and 50-51 are rejected under 35 U.S.C. 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicants respectfully traverse this rejection.

The Office Action asserts that the claims at issue recite a phytase of any species or the phytase is from *Aspergillus niger* yet the specification does not provide an adequate description to support the breadth of these claims. Without acquiescing to this rejection, the claims have been amended such that the phytase polypeptide referred to therein is defined in specific structural terms as being a polypeptide which "comprises an amino acid sequence having at least 95% identity to SEQ ID NO: 4". As

pointed out above, amended claims 1 and 26 now encompass the two specific phytase polypeptides having amino acid sequences of SEQ ID NO: 2 and SEQ ID NO: 4, which are fully disclosed in the present specification. Applicants submit that, with entry of this Amendment, the specification provides an adequate description for the amended claims. Withdrawal of the rejection of the claims as lacking adequate written description is respectfully requested.

Scope of Enablement:

Claims 1-4, 26-27, 30-33, 37-39, and 50-51 are rejected under 35 U.S.C. §112, first paragraph, as allegedly non-enabling. Applicants respectfully traverse this rejection.

Without acquiescing to this rejection and in the interest of advancing prosecution of this application, the claims have been amended to specify that the phytase polypeptide referred to therein is a polypeptide which "comprises an amino acid sequence having at least 95% identity to SEQ ID NO: 4". As pointed out above, there is at least 95% identity between the PhyA-1 polypeptide (SEQ ID NO: 4) and the PhyA-2 polypeptide (SEQ ID NO: 2). With entry of this Amendment, the issues raised in the Office Action are no longer applicable. Applicants submit that the added limitation in amended claims 1 and 26 defines the scope of these claims to phytase polypeptides which are clearly enabled by the present specification, including the Examples.

Deposit Rejection:

Claims 8-9, 28, and 43 are rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the enablement requirement.

Without acquiescing to this rejection, the undersigned states that the deposit of plasmid AGAL Accession No. NM99/06795 has been made under the terms of the Budapest Treaty, and that the plasmid will be irrevocably and without restriction or condition released to the public upon the issuance of a patent.

Claim Rejection under 35 U.S.C. 102:

Claims 1-2, 4, 26-27, 30-33, 37, 39, and 51 are rejected under 35 U.S.C. §102(b) as allegedly anticipated by Verwoerd *et al.* Applicants respectfully traverse the rejection.

With entry of the present Amendment, the claims define a transformed plant or method of enhancing the phosphorus nutrition of a plant wherein the plant ectopically expresses a phytase polypeptide having at least 95% sequence identity to SEQ ID NO: 4. The Amended claims are considered to be free of prior art. Applicants note that the Examiner has indicated, in paragraph 11 on page 13 of the Official Action, that claims 3, 6-10, 28-29, 41-43 and 50 are deemed free of the prior art.

In view of the amendments made in claims 1 and 26, which specify that phytase polypeptides be those comprising an amino acid sequence having at least 95% identity to SEQ ID NO: 4, and the failure of Verwoerd *et al.* (1995) to teach a phytase polypeptide of SEQ ID NO: 4 (confirmed by the Examiner's acknowledgment that claim 6 is free from the prior art), it is considered that claims 1 and 26, and dependent claims thereof, as amended in the present Amendment, are not anticipated by Verwoerd *et al.* Applicants respectfully request withdrawal of the rejection under 35 U.S.C. §102(b).

Conclusion:

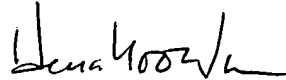
In view of the foregoing, it is submitted that this case is in condition for allowance, and passage to issuance is respectfully requested.

If there are further issues related to patentability, the courtesy of a telephone interview is requested, and the Examiner is invited to call to arrange a mutually convenient time.

This amendment is accompanied by a Petition for Extension of Time (three months) and a check in the amount of \$1,020.00 as required under 37 C.F.R. 1.17. It is

believed that this amendment does not necessitate the payment of any additional fees under 37 C.F.R. 1.16-1.17. If the amount submitted is incorrect, however, please deduct from Deposit Account No. 07-1969 the appropriate fee for this submission and any extension of time required.

Respectfully submitted,



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Attorney Docket No.: 37-02
bmk: June 16, 2005